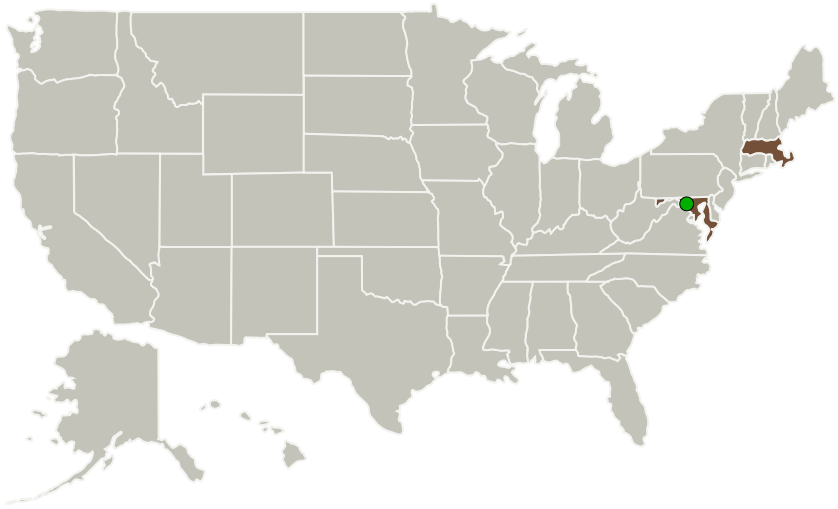
A High Cross-Pol Isolation Multi-Frequency Antenna for Cloud and Precipitation Research, Phase II

Completed Technology Project (2010 - 2012)

Project Introduction

This proposed Phase II SBIR would realize a prototype of an offset Gregorian antenna design that will be delivered to NASA for integration in the D3R GPM ground validation radar system, for which RSS is currently fabricating the radar transceiver through a Phase III project. During the Phase I effort for this antenna system, Remote Sensing Solutions developed a design for a novel dual-wavelength Ku/Ka-band radar remote sensing antenna system with high integrated cross-polarization isolation (> 30 dB) and low sidelobes (< -25 dB). The design provides high gain (< 1 deg beamwidth) and matched antenna patterns in a rugged mechanical configuration that is transportable in a standard sea-container. The primary innovations realized in the Phase I design that would be implemented in the Phase II effort include: an ultra-low cross-pol reflector, a rugged compact feed with very low cross-polarization supporting multiple polarizations at Ku and Ka-band and a robust mechanical structure to meet the antenna electrical tolerances over a wide range of environmental conditions.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Remote Sensing Solutions, Inc.	Lead Organization	Industry	Barnstable, Massachusetts
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Massachusetts

Project Transitions

January 2010: Project Start

March 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138728)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Remote Sensing Solutions, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

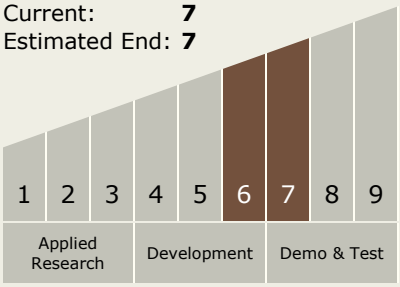
Carlos Torrez

Principal Investigator:

James R Carswell

Technology Maturity (TRL)

Start: **6**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.2 Observatories
    - TX08.2.2 Structures and Antennas

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System